

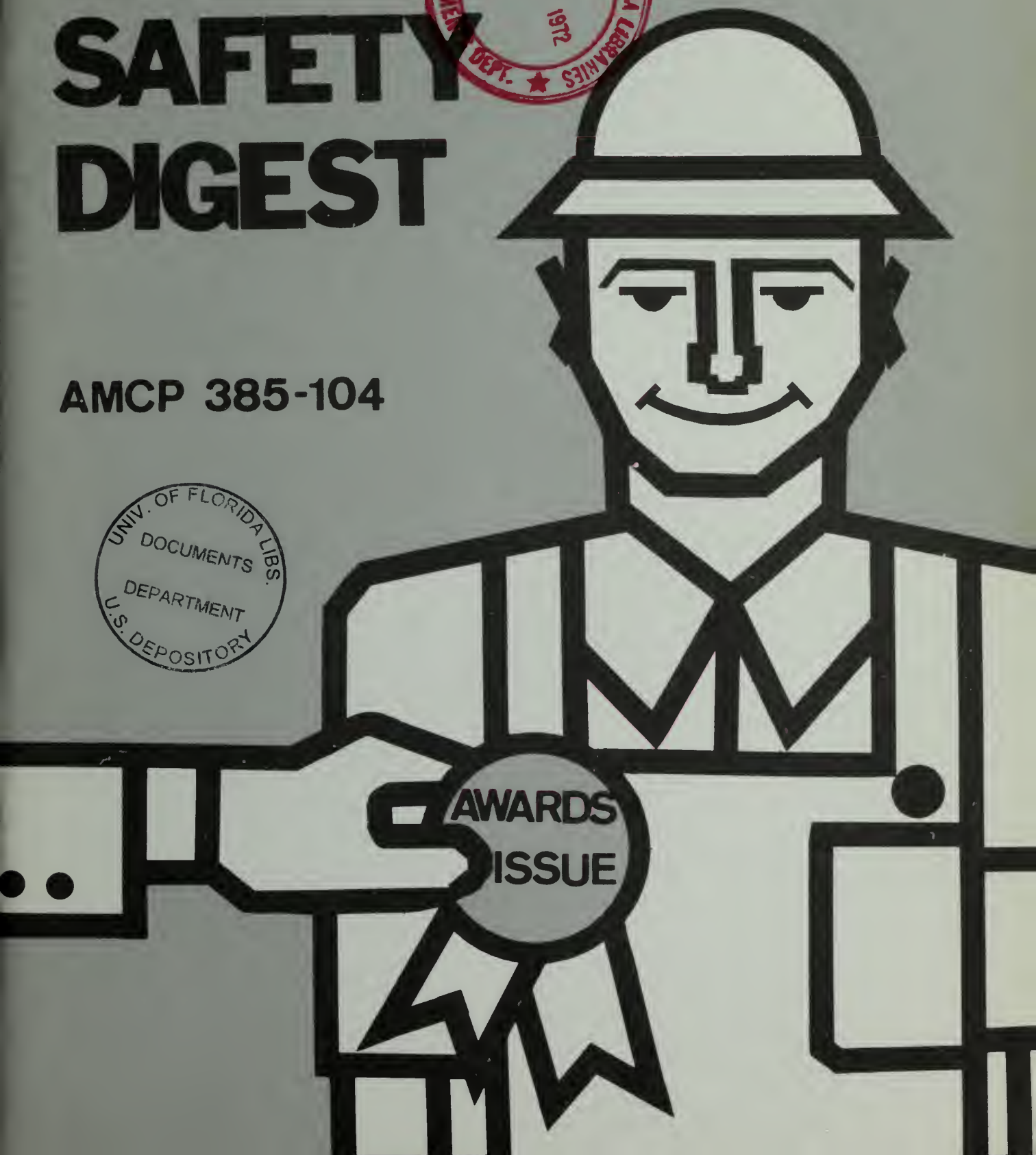
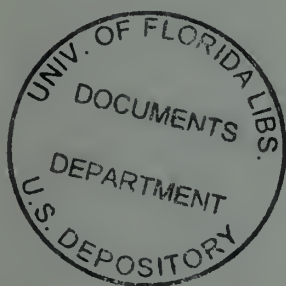
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NOVEMBER 1971



# AMC SAFETY DIGEST

AMCP 385-104



**HEADQUARTERS**  
**UNITED STATES ARMY MATERIEL COMMAND**  
**WASHINGTON, D.C. 20315**

AMC PAMPHLET Number 385-104

NOVEMBER 1971

The Safety Digest is an AMC Pamphlet prepared by the Safety Office, Headquarters, U. S. Army Materiel Command. Its purpose is to disseminate information which can materially influence and improve safety programs at all Command establishments.

Articles are included to supplement technical knowledge as well as practical knowledge gained through experience. They provide a basis for the further refinement of safety measures already incorporated in operating procedures and process layout. To achieve maximum effectiveness, the Safety Digest should be given widespread circulation at each AMC establishment.

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Unclassified material believed to be of interest or benefit to other establishments is welcome for publication in the Safety Digest. Please send articles for review to: U. S. Army Materiel Command Field Safety Agency, Charles-town, Indiana. If possible, include pictures, charts, drawings, and illustrations that clarify and heighten interest in your presentation.

(AMCSF)

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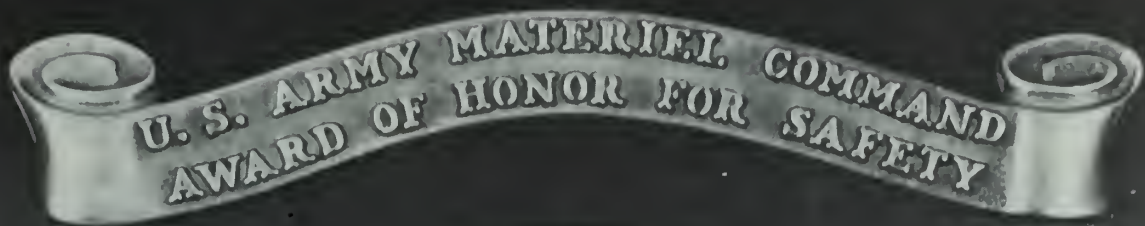
# SAFETY DIGEST

NOVEMBER 1971



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FY 1971  
U.S. ARMY  
MATERIEL COMMAND  
SAFETY AWARDS

### Awards of Honor

U. S. Army Weapons Command  
Red River Army Depot  
Volunteer Army Ammunition Plant  
Jefferson Proving Ground  
U. S. Army Aviation Systems Test Activity  
Thiokol Chemical Corporation, Huntsville Division



### Awards of Merit

U. S. Army Munitions Command  
U. S. Army Aberdeen Research and Development Center  
Tobyhanna Army Depot  
Directorate of Maintenance, ECOM  
ce, ECOM  
Watervliet Arsenal  
U. S. Army General Equipment Test Activity  
U. S. Army Field Artillery Board  
Milan Army Ammunition Plant

### Commendations for Safety

Seneca Army Depot  
U. S. Army Support Center, Richmond  
Letterkenny Army Depot  
U. S. Army Materiel Command Field Safety Agency  
Directorate of Procurement and Production, ECOM  
Rock Island Arsenal  
HQ, U. S. Army Missile Command  
U. S. Army Airborne, Communications and Electronics Board  
U. S. Army Electronic Proving Ground  
Iowa Army Ammunition Plant  
Newport Army Ammunition Plant  
U. S. Army Hughes Plant Activity

# AN APPLICATION OF THE FAULT TREE ANALYSIS

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This article is an attempt to answer the question, "How can system safety be applied at my installation?"

Perhaps it may not be possible to apply all the principles of system safety management at a particular facility; however, the techniques of system safety analysis can be applied to any type of operation.

The particular technique that will be utilized in this discussion is the well-publicized fault tree analysis (FTA).

It has been said that FTA can be applied to virtually any product, process or design with positive results. One tends to feel, however, that the above statement is really just so many words unless he can use the method to help him solve some problem with which he has been confronted.

Therefore, an example for fault tree application has been chosen which should be familiar to many with the U.S. Army Materiel Command; namely, the batch-type manufacture of trinitrotoluene (TNT). This process is accomplished by several different AMC manufacturing plants, and a simplified, generalized schematic diagram of the flow of materials for its production is shown in Figure 1.

The chemical reaction used to manufacture TNT is carried out in three steps, each of which is known as a nitration. Toluene is first converted to mononitrotoluene (Mono-House), which is then changed to dinitrotoluene (Bi-House), and finally this is nitrated to trinitrotoluene (Tri-House). Adjacent to each of the three houses is a "drowning" tank in which the material being processed may be dumped should the need arise. Note that the spent acid from the trinitration, usually along with some additional nitric acid, is used for the denitration; the spent acid from this is used for the mononitration; and the spent acid from this goes to acid recovery for future use. The "tri-oil," or crude TNT, produced in the Tri-House is then refined in the Wash House and is eventually packed and made ready for final disposition.

It is now possible to take the above system; i.e., process, description and use it to construct a fault tree.

A major concern in any such process is that of fire or explosion resulting in an inability to manufacture the end product. This then will be taken as the undesired event. Note its position at the top of the "tree" presented as Figure 2.

Since the process is arranged essentially in a series fashion; i.e., mononitration must occur before denitration which must occur before

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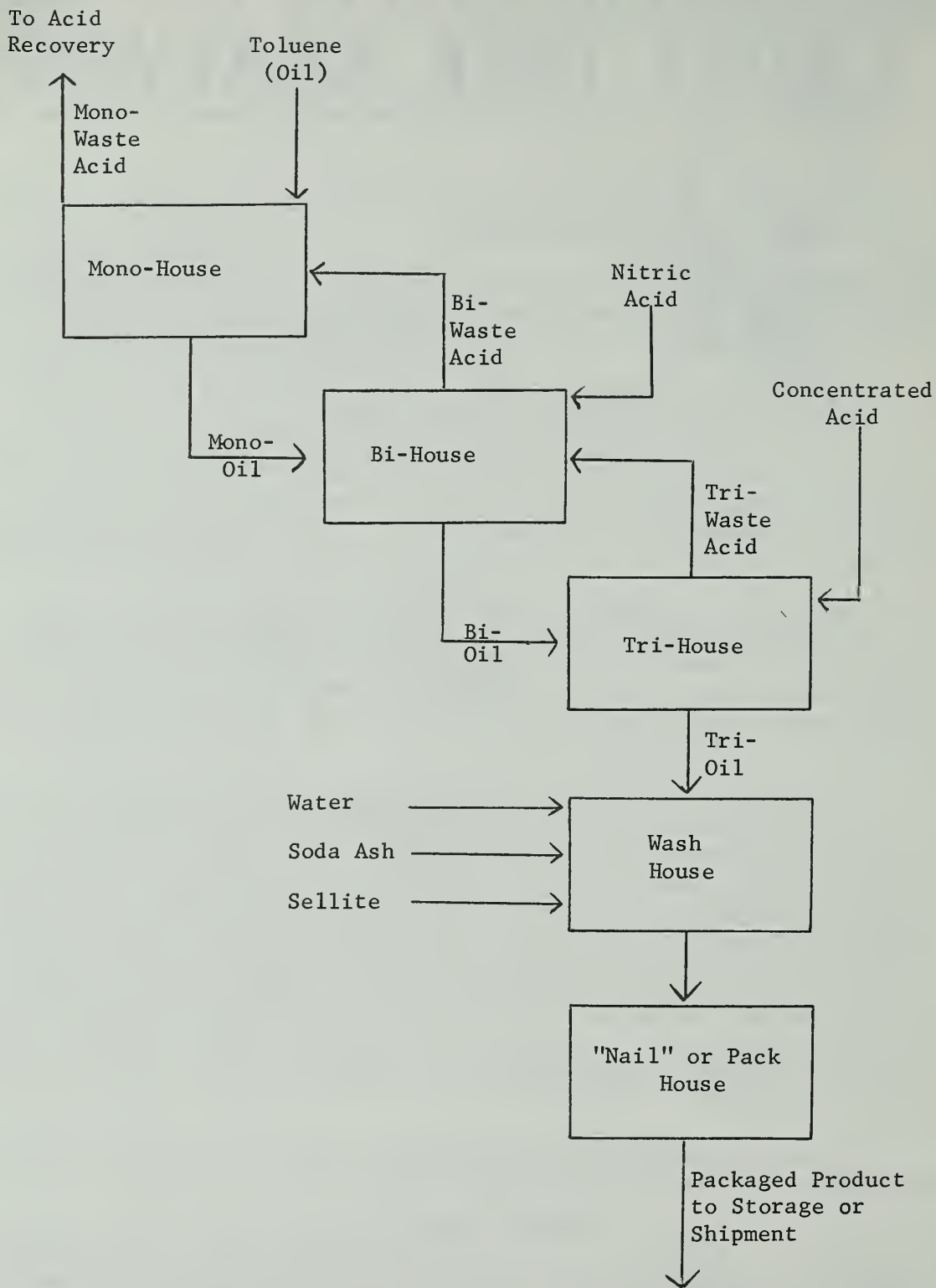


Figure 1. Simplified Schematic Diagram of Trinitrotoluene (TNT) Manufacture -- Batch Process

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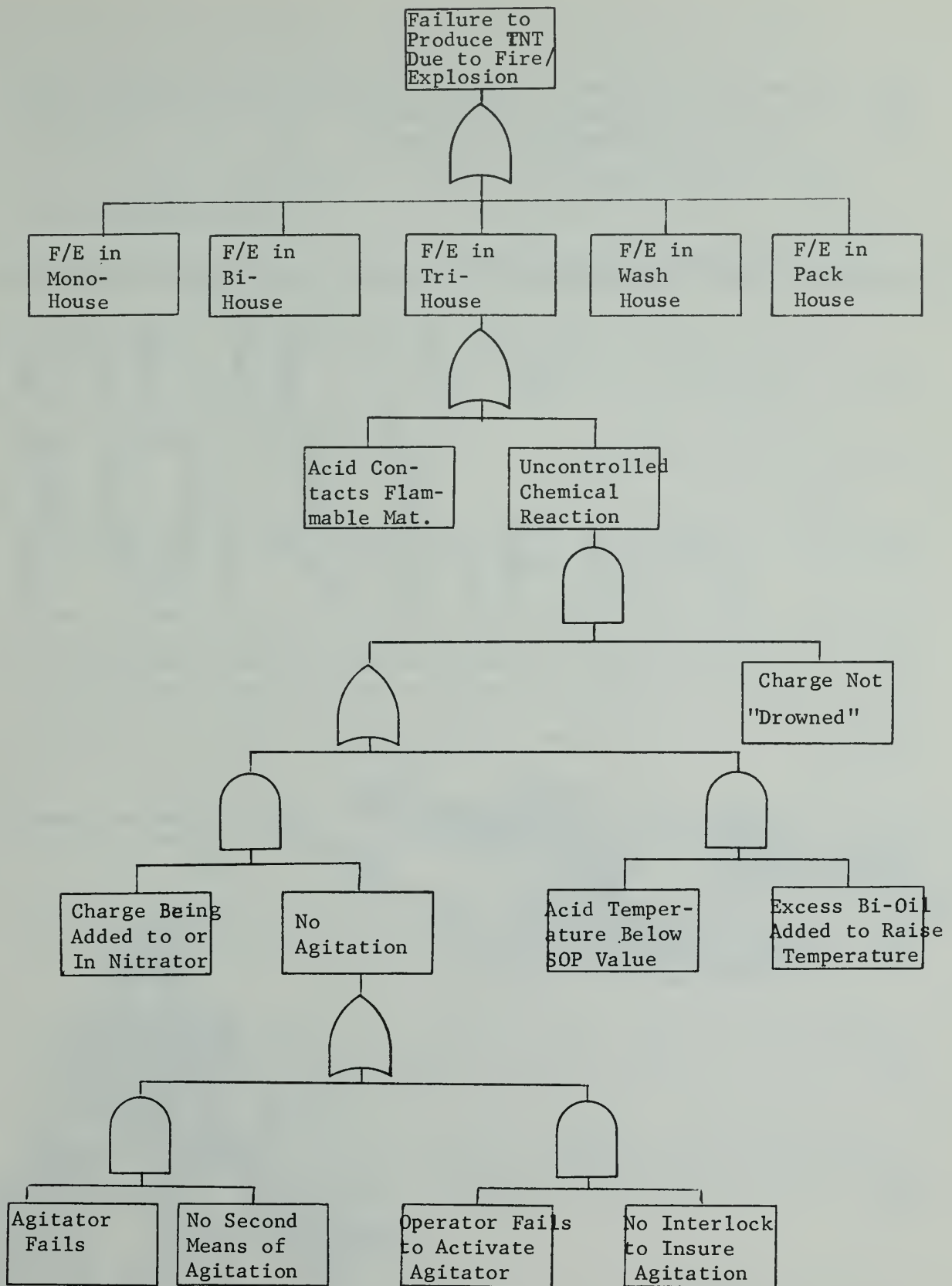


Figure 2. Partial Fault Tree of "Failure to Produce TNT Due to Fire/Explosion" for a Batch-Type Plant

trinitration, etc., it should be obvious that the loss of any one of these major subsystems due to fire or explosion will result in the undesired event. This condition requires an "OR" gate.

It is now possible to examine each of the subsystems, in turn, to determine the sequence of events that could lead to the undesired event.

For the purpose of this discussion, only one of the major portions of the process, the Tri-House, will be examined in any detail.

A fire or explosion could result in the Tri-House if either acid comes in contact with a flammable material; e. g., oil, or if an uncontrolled chemical reaction develops in one of the nitrators.

Although both conditions could be developed further, consider analyzing only the hazard produced by the "runaway" reaction.

A number of events could produce this situation, two of which will be considered. Either of these conditions coupled with failure to "drown" the charge will produce the undesired reaction.

First, consider the consequences if prior to bi-oil addition, the temperature of the acid in the nitrator should drop below the value specified in the SOP and instead of using steam to raise the temperature as required by the SOP, a "short cut" is taken, and an excessive amount of bi-oil is added out of sequence instead. When the reaction begins, the temperature rise, and consequently the reaction rate will be too rapid to control.

Rather than explore either of these conditions to any greater detail, consider an alternate manner in which an uncontrolled chemical reaction could be obtained.

If the charge is either being added to or is already in the nitrator and there is no agitation and the charge is not "drowned," an uncontrollable situation exists once more.

Here again, either of these events could be analyzed. For example, in looking for the causes of no agitation, it could be found that the operator failed to activate the agitator and that there was no interlock that would insure agitation prior to processing the charge.

Even though the "tree" will be terminated at this point, it is hoped that the reader realizes that the analysis could be expanded to almost any level of detail dependent, of course, upon the analyst's knowledge of the system.

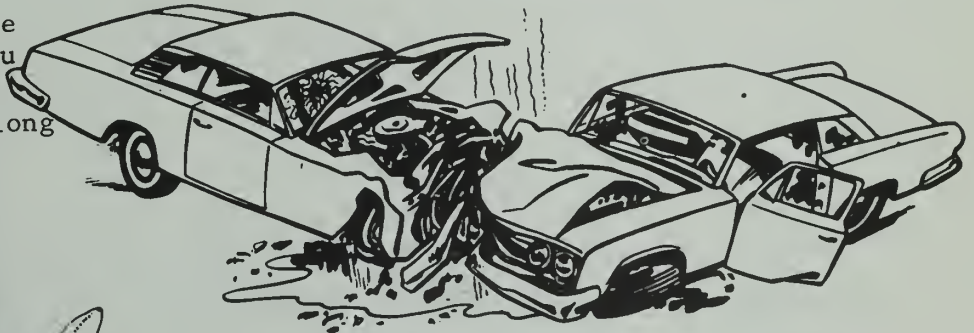
CON'T

Also note that throughout the entire derivation of the fault tree, no mention was made relative to numerical evaluation of the results. It can be seen that even with the limited amount of information made available by this partial fault tree that useful recommendations; e.g., stressing the importance of agitation to operating personnel and providing a second means of agitation, can be made to management to alleviate the primary hazard event. It is even possible to relate the cost of implementing the proposed recommendation(s) to that cost which can be expected should the undesired event actually occur.

# HOLIDAY SAFETY REMINDERS

With the Thanksgiving, Christmas and New Year's holidays just ahead, it might be wise to call to mind a few tried but true reminders.

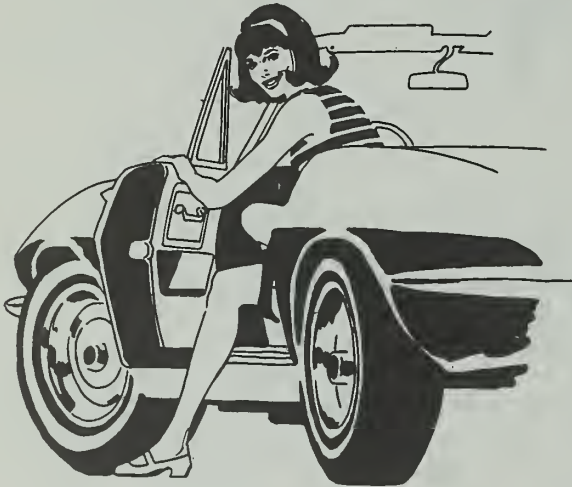
1. Drive as though your life depended on it- it does, you know. Better stay home and alive than try to make too long a trip in too short a time.



2. Make sure those shiny new toys are safe. Electrically powered toys should be UL approved; Teddy bear eyes should be secure.

Finally, one should realize that the purpose of this discussion was not to cover all the possible ways in which a fire or explosion could occur in a batch-type TNT plant, but rather to provide an answer to the question asked at the beginning of this article. It is hoped that the reader now sees that the application of system safety analysis is not limited to sophisticated hardware, to manufacturing processes or to accident investigation, but that it can serve as a means to identify accident situations, in whatever form they might exist, which could have been missed if less detailed procedures had been used.

END



3. Drinking and driving still do not mix.  
Don't let your holiday party have a sad ending.

4. Fires can crop up at this time of year.  
Christmas trees and fireplaces make for many memories. Let them all be happy ones.



These are but a few thoughts.

Look around for more. Have a safe and happy holiday season.

# ALCOHOL and the DRIVER: A LIVE DEMONSTRATION



SP5 Barry Rietze  
Sacramento Army Depot

Prior to each major holiday, the Sacramento Army Depot safety office, in conjunction with the California Highway Patrol, gives an informative class on safety for the military personnel assigned to the depot. The program for the Memorial Day weekend emphasized the number one highway menace, the "drunk driver." Highway Patrol Officer Donald J. Basham served as class coordinator.

Never before in the history of the United States Army has the actual concept of volunteering for something really paid off. The safety office asked for four volunteers to help Officer Basham conduct his class. To the dismay of those who volunteered, the job was simple....get drunk and help demonstrate the California Highway Patrol's "Controlled Drinking Test." This test was originally designed for patrolman cadet training as a practical means to identify drivers under the influence of alcohol.

Having approximately two hundred eager volunteers stationed at the depot, the number of individuals who volunteered equaled almost one hundred per cent. COL Jack C. Potter, Depot Commander and a strong supporter of the depot safety program, was the lone individual who did not volunteer. Knowing that drinking and driving do not mix, COL Potter did not want to hurt his driving on the golf course after the class. When you shoot in the 80's you try harder.

The test utilized eight soldiers of the 605th LEM Company stationed at the depot. Four men did the drinking as the remaining four poured the beverages and kept the all-important watchful eye on the "drunks." Each man drank a maximum of either 14 ounces of 100 proof liquor or two standard six-packs of California's best beer. In addition to medical supervision by the Depot Surgeon, the four volunteers were closely monitored during and after the test to assure validity of the results and complete personal safety. To establish realistic conditions, snacks were eaten during the four hours allotted for the consumption of alcohol. At the end of this period, the volunteers' blood alcohol level could be expected to be somewhat over the threshold of the California presumptive level of .10 per cent. At this time, with blood alcohol levels ranging from .13 to .16 per cent, the four soldiers, along with their companions, were brought before the assembled military class. The fun had just begun.

Marching into the auditorium like no Army squad has ever marched before, the test group left little doubt in the minds of the audience as to the effects of the beverages. Under the supervision of Officer Basham,

CON'T

the volunteers were submitted to a "breathalyzer" test, interrogations to determine reasoning ability and a display of manual dexterity and reaction time in addition to the usual roadside tests given by traffic officers to determine sobriety. The results were as expected. Only three soldiers actually participated in the demonstration. The fourth young man consumed more alcohol than his body could tolerate and spent the entire class "passed out" backstage.

The actual results of the test showed that each man was unable to control his natural abilities. To be placed behind the wheel of an automobile would be disastrous. Although the demonstration produced many laughs, the idea of NOT DRINKING WHILE DRIVING was taken seriously by each individual in the audience.



Member of test group undergoing "breathalyzer" test.



Soldier's braking reaction time is verified by this test.



Simple reasoning and manual dexterity tests befuddle the inebriate.

Editor's Note: Mr. E. L. Wenk, Training Instructor, Industrial Relations Division, recently presented the following talk as the Safety Topic of the Month to the Central Safety Board at Louisiana Army Ammunition Plant. Mr. Wenk has been actively engaged in training in all phases of the Supervisor's and Employee's Safety Training Program at the Plant for more than three and one-half years.

# Safety

## TRAINING and the WORKER

INDUSTRIAL  
RELATIONS  
DIVISION  
★  
LOUISIANA ARMY  
AMMUNITION PLANT



In 1968, approximately one year after a training school had been established on this plant, a survey was made to determine if this training had actually helped the employee and, of course, the company. The survey revealed that those employees who attended the school had less accidents, fewer injuries, and a lower number of SOP violations than those employees who had not gone through the school. It was decided that training made the difference.

There is a saying that "it is hard to teach an old dog new tricks." If employees are not taught the importance of wearing protective equipment or following the SOP during basic orientation, it may be difficult to teach this to them later. Bad habits, once learned, have a way of persisting despite corrective efforts.

Lack of knowledge or skill is one of the prominent causes of accidents. Perhaps an injured man was not taught the right way to do his job at the beginning or maybe he acquired bad habits or short-cuts along the way because there was no follow-up to initial job instruction. Occasionally an employee commits an unsafe act because he is confused by unusual conditions. He must be constantly reminded to expect the unexpected and to be alert at all times.

Safety training is a continuing process, because in one sense, safety is a philosophy of life. It never ends. Refresher training is needed to keep people alert to the hazards involved in their jobs. Giving orders and posting rules do not keep people from doing things improperly. Employees must understand reasons for procedures if we expect them to cooperate. A violator may not think that safety requirements are necessary, or he may not understand them and believe he is following prescribed procedures, when in fact, he is not.

It is easy for supervisors to become so familiar with "routine" jobs that it is difficult for them to remember how much is required that the novice does not possess. It is important that the supervisor start with basics in safety training and not assume new men or reinstatements know more than they really do.

Almost invariably, the trainee, when asked, will say he understands what is being taught, when often he does not. The supervisor should ask the employee to explain the job to him, and if he explains the job correctly, then he should be asked to perform the job with the supervisor observing to make any necessary corrections.

Occasionally a man attempts something beyond his capabilities (because it looks easy) and soon finds it more difficult than he thought. It has been said that easy jobs are the source of most accidents.

Instructing is the supervisor's first job, no matter who else assists with the instruction. He is a teacher. Those to be taught are individuals with varying degrees of knowledge and skill and with varying capacities to learn. The supervisor must live with his students long after the "course" is over, so he must be sure that he has taught. The supervisor is teaching employees not only how to make a living, but how to live.

If people are to work safely, they must be properly instructed to work safely. Good instruction makes a person a better worker, more satisfied with his job and the company, and more willing to go along with programs which the company and his supervisor advocate. Lack of training may cause the employee to develop an attitude of defeat. He may become uninterested in his job, and he will continually be uncertain and hesitant. Injuries, work stoppage, and misused or broken equipment are almost certain to result when a worker has been inadequately trained.

A well trained employee is a safe and efficient employee.

A safe and efficient employee is a well trained employee.

To be well trained, and therefore to do the things the supervisor wants done effectively, employees need clear communication with their supervisor. Telling is not necessarily teaching. A foreman can tell his workers to put on their safety glasses but communicate to them that after the safety man leaves it is O.K. to take them off. If the foreman has instructed his employees properly, he has communicated to them that he wants them to wear safety glasses for their protection all the time, not just in the presence of safety personnel. The supervisor has communicated by the tone of his voice and other means that "he" is concerned with their safety and well-being. If the foreman can communicate to his workers that "he" is not just paying lip-service to management, then he will have a safe operation.

It is important that the foreman actually mean what he says, and says what he means. He must be sincere. A "token" effort will not get the job done. Performance is what counts. Was the employee properly trained? If not, why not? Is the employee afraid to ask questions later because the supervisor may think he is "stupid?" Is the situation such that the employee feels free to ask questions without fear of ridicule or sarcasm?

Who needs safety training? Who doesn't?

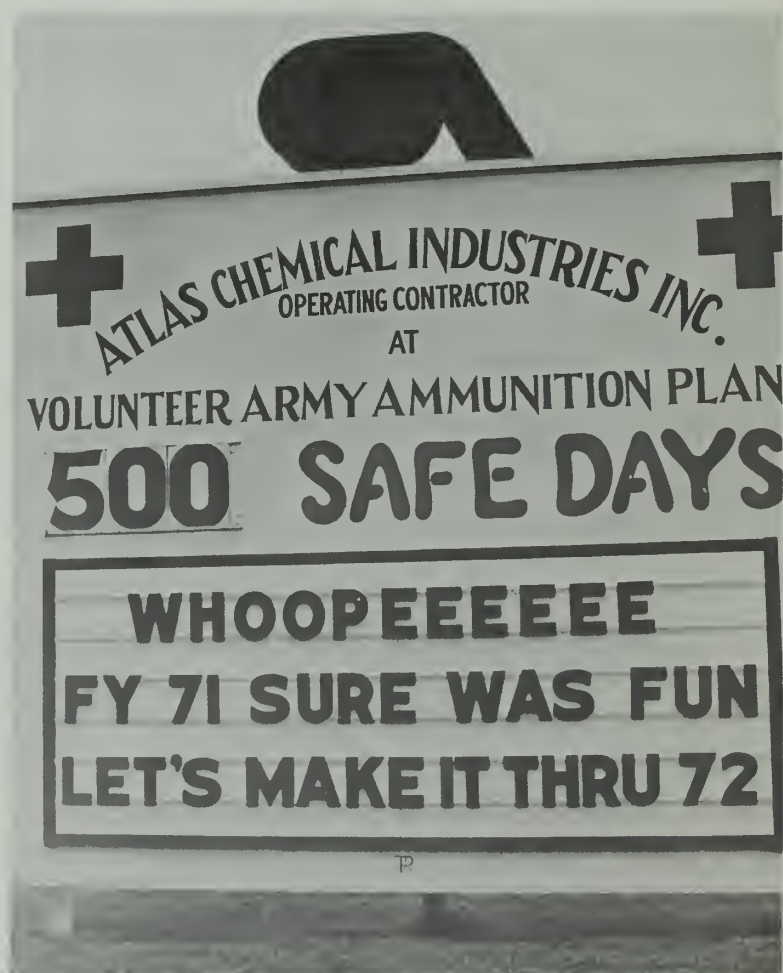
An advertisement in a recent issue of the "Shreveport Times" serves as an excellent example of how intensive training benefited a company during 1970. It attributed its good performance to concentration on three objectives, one of which was management training. Last year it spent nearly \$400,000 to train 45 new branch office managers. It also trained 761 new account executives. What did this do for the company? What were the results? As you know, it's performance that counts. Although, the stock market, as a whole, was down last year, this company's net profits were up 32 percent from 1969. The interest the company has had in training over the years has paid substantial dividends. It has made a profit every year for the last 30 years. A company such as this would not be investing approximately \$10,000 to train each branch manager unless it expected to get a good return on its investment.

END

This billboard display greeted employees at Volunteer Army Ammunition Plant as they entered the main gate 1 July 1971. The plant had just accumulated 500 days of operation without a disabling injury. Should this experience continue, Volunteer will have reached the 5 million man-hour plateau around 1 October 1971. Such an achievement would break the plant's record of 4.7 million man-hours without a disabling injury.

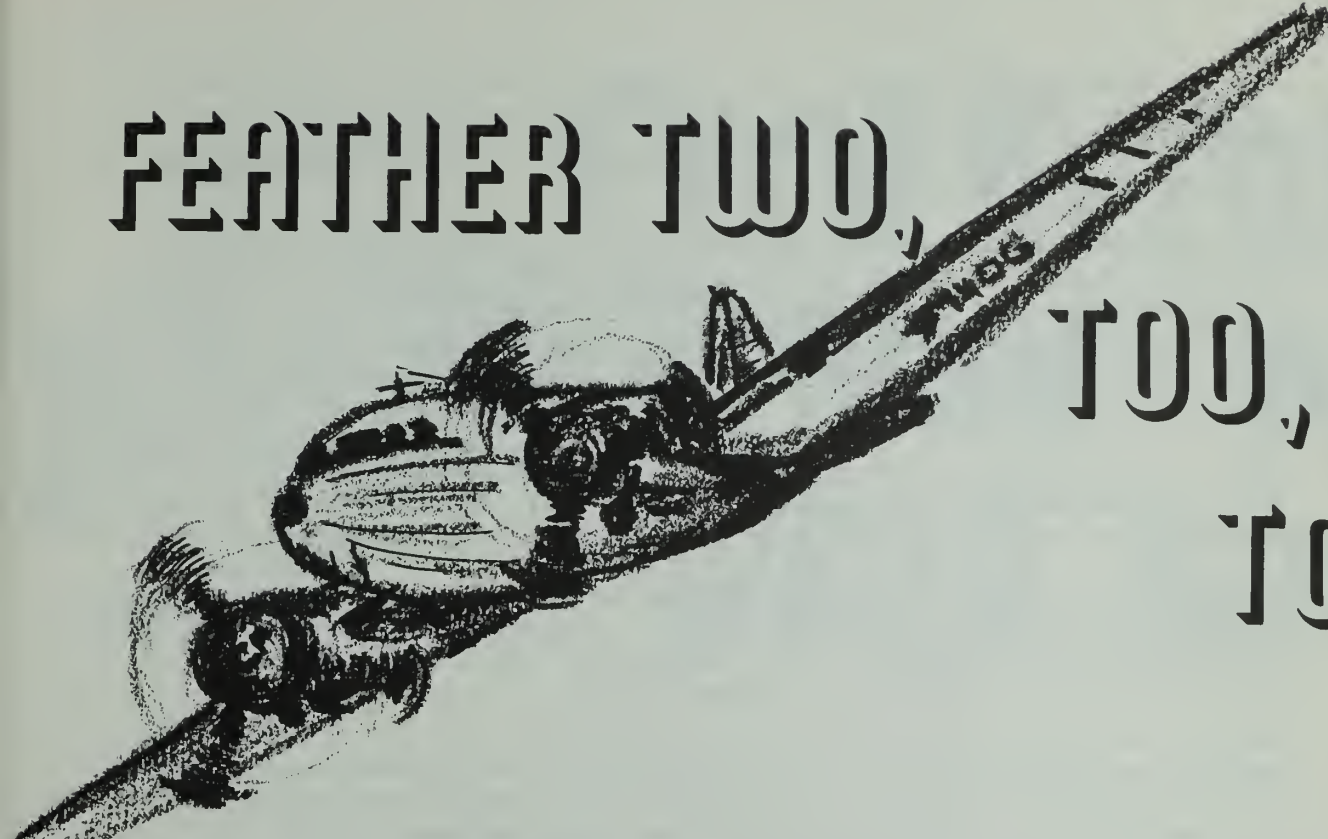
# VOLUNTEER ARMY AMMUNITION PLANT

safety record  
continues  
to climb



# FEATHER TWO,

# TOO, TO



JOHN L. HUESER, DAC  
Aviation Safety Officer, New Cumberland ARDEP

Combining a service mission with a training requirement is the ideal solution and strongly encouraged within the bounds of flight safety, mission requirements, and to coin an old phrase: "kill two birds with one stone." In this case, it could very likely have been three crew members. Names, dates, and places have been altered to protect the obvious.

A nonstandard Army aircraft C-47 departed New Bedford Army Depot on a clear day (CAVU) for a destination some 900 miles on the distant horizon with a crew of three. DAC Smith, Instructor Pilot, 5,000 hours, 30,000 hours in type; CW3 Jones, Pilot, 6,000 hours, old head, 15 hours in type (undergoing transition); and SP/4 Kelly, Crew Chief, two months' experience as a crew chief on a C-47.

Assigned mission was to drop off 2,000 pounds of urgently needed cargo in support of SEA at destination airport and return to home base, AND Mr. Smith, the IP, where possible, was to continue to instruct CW3 Jones on the intricacies of the C-47 during cross country flight.

The trip to destination airport, including the landing (no-bounce), refueling, cargo unloading and lunch, was routine. The weather checked good, a VFR Flight Plan was filed for the return trip home - another "routine" flight.

CON'T

After climbing to 7,500 feet, the IP carefully explained how to feather an engine in flight in the event of engine failure and proceeded to demonstrate by feathering the left engine and following up with a step-by-step clean-up procedure.

CW3 Jones was told to retrim the aircraft for single engine flight and to practice shallow turns, of not more than thirty degrees, and several climbs and descents of 300 feet more or less and then return to 7,500 feet. CW3 Jones practiced the maneuvers while Mr. Smith, the IP, sat back and relaxed with a casual eye on altitude, needle and ball, air-speed and degree of bank.

After twenty minutes or so and again in straight and level flight, Mr. Smith explained, while using the check list, the procedures used to unfeather an engine.

(For the non-multi-engine types, it must be noted at this point that the ending phase of "feathering" an engine and the beginning phase of "unfeathering" are undiscernible, in that the sound is exactly the same and even the indications on the loadmeter are similar.)

During the actual demonstration to unfeather the left engine, the right engine very efficiently went into feather, and, as professional pilots, we know that a two-engine aircraft with both engines in feather will not remain aloft. The sequence of events that followed was, while admittedly hurried, highly professional and accurate and resulted in a loss of only 500 feet or so before the right engine was back "on line" followed closely by the left, and a definite end to single engine operations for the remainder of the flight home.

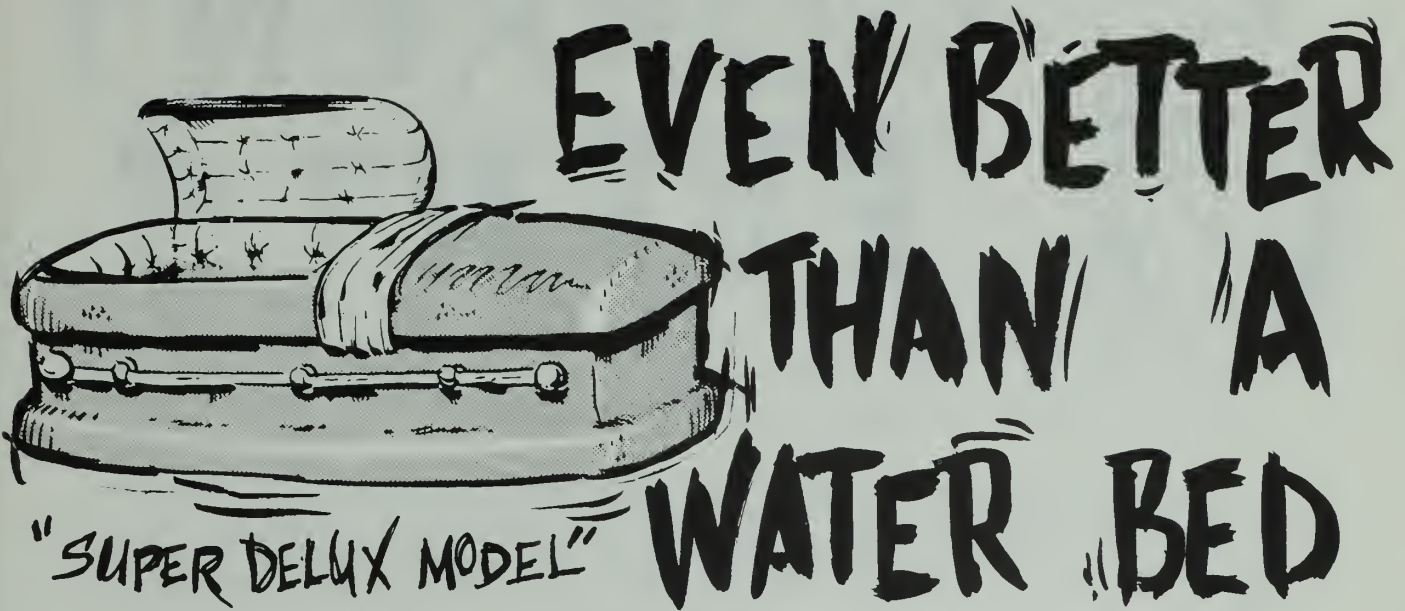
After landing at "home," the aircraft was given a thorough maintenance and operational check, including a local test flight to 9,500 feet and repeated attempts to duplicate the situation. No success!

Why? What happened? It can safely be assumed, I think, that Mr. Smith, punched "the wrong button." Call it complacency, inattention, carelessness, or fatigue, or maybe even drowsiness after too much lunch; call it whatever you wish, but "it" always shows up when you least expect it--usually when everything has been "routine" for a long period of time.

Situations like this occur frequently, and are, hopefully, good for a few laughs at the club, but they should also be good for some self-examination about procedures and SOP's, etc. "Would an hour of cockpit time have prevented it." "Is our transition program thorough enough." We've all punched the "wrong" button at one time or another and hopefully, as in this case, the result was only embarrassing. But each time, the potential accident was waiting to happen.

If this story has a moral, it's simply this: each flight has a passenger whose name isn't on the manifest--his name is Murphy--and only you can make sure he stays just a passenger and not an active participant in the flight.

END



# EVEN BETTER THAN A "SUPER DELUX MODEL" WATER BED

Courtesy 34th GSG (RVN) Newsletter

A real eye catching traffic stopper and no second hand models available. Everyone will envy you as you enjoy the satin smooth ride of this comfortable vehicle. Sleeps only one and comes equipped with six wing walkers. This model is in heavy demand by hot shot pilots who are literally dying to get in one. To insure rapid delivery, comply with the following:

1. BE AGGRESSIVE - NEVER PREFLIGHT - KICK THE TIRE AND GO.
2. BE SOCIABLE - PARTY IT UP - NEVER EAT BREAKFAST AFTER A HARD NIGHT.
3. BE LOYAL - DON'T REFUSE OVER GROSS LOADS - PLAY SUPERMAN AND TRY ANYTHING AT LEAST ONCE.
4. BE TRUSTWORTHY - BET YOUR LIFE ON THE 20 MINUTE FUEL WARNING LIGHT EVERY DAY.
5. BE BRAVE - FLIRT WITH THUNDERSTORMS AND MARGINAL WEATHER.
6. BE ATTENTIVE - TAKE A NAP AT THE NEXT SAFETY MEETING.
7. BE HEALTH CONSCIOUS - TREAT YOUR OWN COLDS AND ALLERGIES AND IGNORE THE FLIGHT SURGEON. ("CONTACT" IS MORE THAN A VERBAL WARNING IN AVIATION)
8. BE INQUISITIVE - FLY AT TREE-TOP LEVEL SO YOU LEARN THE LAY OF THE LAND.

Obey all the above and rapid delivery of your Super Delux Model is guaranteed.



# CURRENT EVENTS

## OFFICE SAFETY IS FOR REAL!

A typist was using a chair which was unfamiliar to her. As she arose to leave her desk, the chair rolled out from under her and before she could firmly plant her feet upon the floor, she became entangled in the chair legs and fell to the floor. The worker suffered a disabling back sprain.

At another installation, a worker was performing routine office duties at her desk. As she attempted to rise from her chair, one foot caught a chair member. She lost her balance and fell to the floor. This fall resulted in the worker's suffering a fractured left forearm.

In neither of the aforementioned office accidents was defective furniture at hand. These accidents are representative of several non-spectacular, injury-producing accidents which occur more frequently than most people think. Office hazards and elimination thereof cannot be over-emphasized. In many cases, the hazard is nothing more than the worker's lack of awareness or inattentiveness.

\*\*\*\*

## THE DAY THE ROOF FELL IN

A female employee was engaged in her assigned duties on a packing line. Without warning, and through no act of her own, a slab of gypsum board fell on the worker. She suffered contusions about the head and was disabled for two weeks.

Above the location of the accident, was a ceiling monitor section, which had once been opened for ventilation. When heating was placed in the building, the open ceiling was capped over with gypsum board. Pieces of various sizes were laid lengthwise over the narrow opening. The section which fell measured 18" X 12" X 2".

Investigation of the accident indicated that a culmination of several conditions; i.e., building settling, moisture, vibration, etc., gave rise to this incident. To prevent similar accidents, the installation promptly removed all gypsum boards at the accident site and nailed large pieces of plywood over the opening. A roof cap was placed over this construction. Other areas were inspected for loose gypsum board.

# "SHIFTING" CARGO "TILTS" TRAILER

Two workers were assigned to transport palletized units of 90mm rounds from a maintenance line to a storage area. Each unit consisted of 15 boxes (30 rounds) with a weight of 1,980 pounds. At the time of the incident, eight units were being transported in a van-type trailer drawn by a five-ton tractor.

The trailer was pulled approximately three miles when the driver, while rounding a curve near the destination, felt a shifting of cargo. In coming to a complete halt, the driver noticed through the side mirror that the trailer was starting to tip to the left. Suddenly the entire tractor-trailer unit overturned on its left side.

Both driver and passenger suffered first-aid injuries only. The windshield popped out when the vehicle overturned, and egress from the tractor was made through the windshield opening. Damage to the tractor-trailer was estimated at \$2,200.

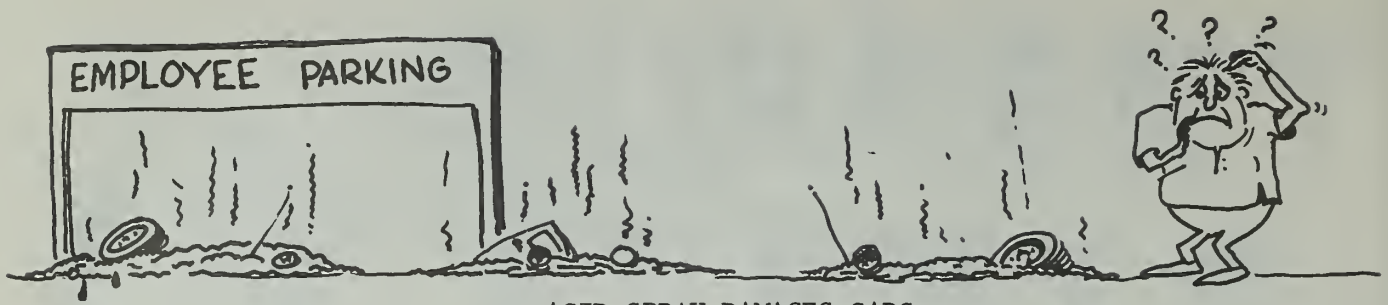
Analysis of the accident revealed that the load was not secured in accordance with the approved standing operating procedure. Also, it was determined that the cargo shifting was prompted by the extremely smooth wood surfaces of the units and their transfer pallets. The glazed condition of these two bearing surfaces and the lack of proper blocking and bracing provided the environment necessary for the eventual overturning.



Vehicle damage is shown in this photo. Note the displaced windshield which provided a route of evacuation for the driver and his passenger.



This photo shows a rear view of the overturned tractor-trailer. A palletized unit and a transfer pallet are visible from the open rear of the trailer.



#### ACID SPRAY DAMAGES CARS

Workers in a TNT manufacturing area were preparing to unload acid (oleum) from a tank car. Discharge lines had been attached and air pressure applied in preparation for the acid transfer.

Shortly after the unloading pressure had been reached, oleum began to spray at the gasket connecting the flexible unloading hose to the flange on the tank car. The air supply was shut off immediately at the pressure reducing station; however, the acid spray continued until the pressure was bled off through the pumping line. Several privately owned vehicles in an adjacent parking lot received acid mist damage.

Disassembly of the hose/flange coupling revealed no damage to the gasket. The leak apparently occurred as a result of improper tightening of the bolts of the flexible coupling.

All personnel were reinstructed to check the coupling at the car unloading station to assure that the coupling is in good condition and properly tightened prior to each pumping operation. Also, an air bleed-off valve is being installed to preclude the spraying of acids while under pressure when a malfunction occurs.

\*\*\*\*

#### MOVING MACHINE PARTS CATCH FINGERS

A contractor employee was operating a 6-ton rotary consolidation press on a 40mm illuminant candle manufacturing line.

The rotary press is equipped with six die stations located around the perimeter of the turntable. The operation begins with the insertion of a cardboard sleeve into the die, and placing of the die funnel on top of the sleeve. The dies are then charged with a scoop of first fire powder and rotated under the consolidation punch.

As the dies pass the scooping operator a second time, a charge of illuminant powder is dumped and consolidated. After this consolidation, a second operator actuates an ejection ram switch which ejects the loaded item. The candle is placed on a conveyor belt in front of the press.

While removing a die funnel from a candle, the operator dropped the candle between the conveyor and the press. It came to rest inside the ejection ram housing. As the operator reached to retrieve the candle, the ejector cycled at the adjacent station, entrapping the worker's right hand between the ejector limit switch bracket and the base of the machine. The operator suffered fractures of the right index and middle fingers.

Analysis of this accident revealed that the machine was inadequately guarded. And, as is so often the case with a machine guarding deficiency, the operator thoughtlessly sought access at this location.

A shield has been installed over the side opening of the press to prevent objects from entering the ejection ram housing. Also, all press operators have been instructed to turn off equipment before placing their hands near points of operation.

END  
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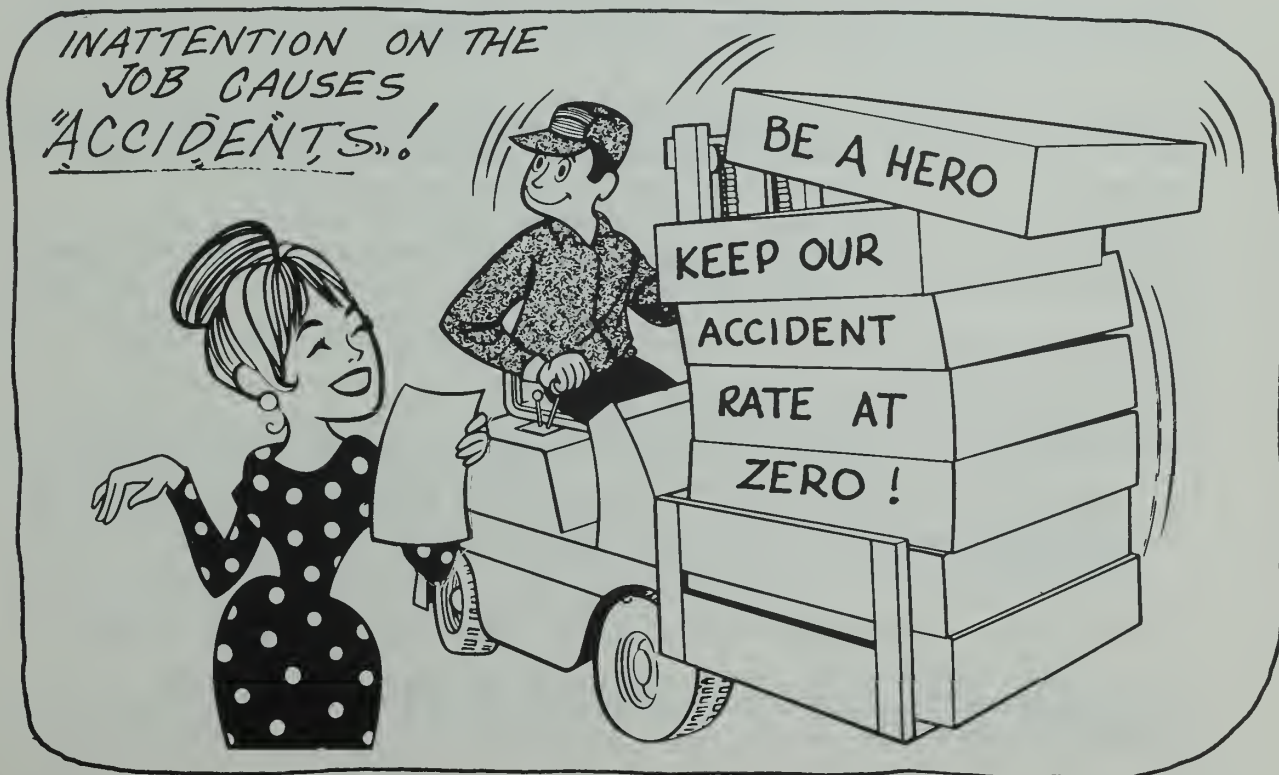
#### UNAUTHORIZED, UNTRAINED, UNFORTUNATE

An 18 year old enlisted man, in the performance of CQ duties, had access to the ignition key of an M151A1 truck. While driving from his company headquarters to an airfield, he lost control of subject vehicle and struck a tree. The driver suffered only minor injury; however, the vehicle received approximately \$1,055 damage to its right side.

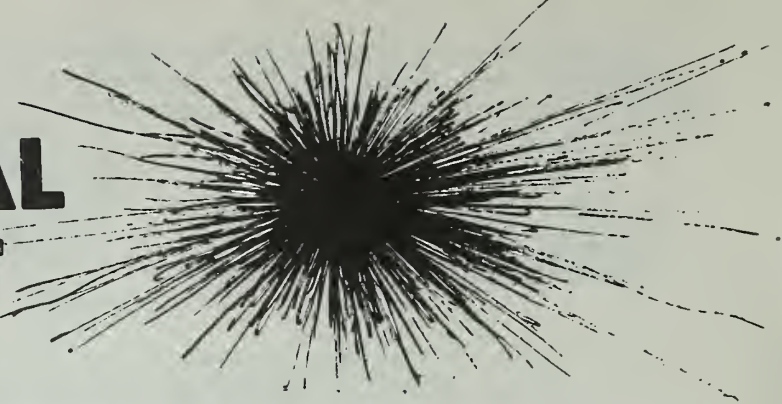
Investigation of the accident revealed the following:

1. Although the trip to the airfield appeared to be in the line of duty, the driver was not authorized use of the vehicle since he was not licensed.
2. The driver had no driving experience in any type of Army vehicle.
3. The driver had been on continuous duty for approximately 18 hours.

Indeed, the unauthorized use by untrained personnel of vehicles, equipment, etc., quite often leads to unfortunate happenings.



# SERIOUS POTENTIAL INCIDENT



Newport Army Ammunition Plant reported that while en route to the Loading Dock with a trailer load of propellant, a driver noticed that his vehicle's wheels seemed to be dragging. He stopped the vehicle and inspected his hookup and the trailer tires. Not finding anything unusual, he continued down West Magazine Street toward the Loading Dock. At the intersection of West Magazine Street and Broadway, he saw, as he looked in his mirror, smoke coming from the rear tires. He immediately stopped the vehicle and a fire extinguisher from the tractor was used in an attempt to cool down the tires. The Fire Department was notified and they further cooled down the tires with water before any attempt was made to move the trailer.

In order to move the trailer for inspection, the brake's air hoses were switched from their standard position (emergency air on the right and service air on the left). The brakes were found to operate in this position. The trailer was spotted at the Loading Dock, unloaded, and then inspected for proper brake operation and air line connection.

Investigation revealed that a new air relay valve had been installed before the trailer, No. 148, had been brought to NAAP. The air lines to this valve had been improperly installed, making it necessary to connect the emergency hose to the service line and the service line to the emergency line at the front of the trailer in order to have the brakes operate properly.

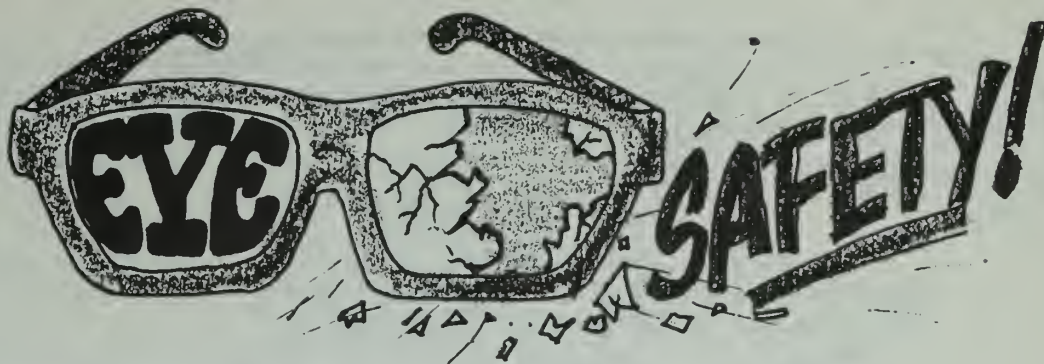
The trailer had been used at NAAP prior to the incident, but the need to switch the lines in order to operate the brakes properly had not been recognized due to improper training of operating personnel.

Another trailer, No. 141, received at the same time as No. 148, had the same improper hookup of the relay valve.

The garage had not inspected the air brake system since the trailers were driven to NAAP.

Recommendations to preclude similar incidents included the following:

1. Operating personnel will be instructed on the mechanics of air brake systems. They will also be retrained on the system's proper use and application.
2. Air lines to emergency relief valves have been installed correctly.
3. The air brake system of all trailers delivered to NAAP will be thoroughly inspected.



Following is a compilation of the more prevalent eye-safety infractions observed during surveys conducted by Occupational Vision Officers of the US Army Environmental Hygiene Agency:

a. Civilian employees purchasing their own "safety" spectacles for reasons of comfort or cosmetics. In most instances, these privately procured spectacles are heat-treated dress eyewear rather than industrial safety spectacles and do not meet the requirements of Federal Specification GGG-S-620 or American National Standard Z87.1-1968. It should be noted that the specifications apply to frames as well as lenses and call for distinct identifying markings.

b. Military personnel engaged in eye-hazardous industrial occupations not being issued safety spectacles along with their civilian counterparts. Spectacles manufactured at Army optical laboratories do not meet the requirements of Federal Specification GGG-S-620 or American National Standard Z87.1-1968.

c. Provisions not being made to issue safety spectacles to employees having useful vision in only one eye, regardless of the hazardous nature of the job. Eye protection should be provided when corrected vision in one eye is 20/50 or worse.

d. Excessive procurement time for prescription-safety spectacles, in some instances over 90 days. Delays are often compounded by complex in-house procurement procedures and slow service on the part of the optical manufacturer. Time elapsed from submission of request to issue of spectacles should not exceed 20 working days.

e. Employees for whom prescription-safety spectacles have been purchased not being instructed to return to their eye doctors for verification and fitting. At some installations, this service is provided by the Optometry Clinic, when available.

f. Non-prescription (plano) safety spectacles being issued with no provisions for individual fittings. Comfortably fitting spectacles are especially important for employees who do not normally wear glasses and, therefore, have difficulty adjusting to them when required to do so.

g. Eye-hazardous areas not being posted with signs requiring the wearing of eye protection as a condition for entry. These signs should be color coded in accordance with AR 385-30.

h. Eye-safety rules in eye-hazardous areas not being enforced, visitors to these areas not being provided with protective eyewear, and normal traffic being permitted through these areas.

i. Eye-lavage fountains not being installed where chemical eye-splash is a recognized hazard. Employees handling eye-injurious chemicals and those in the immediate vicinity of such operations should be instructed in emergency procedures to assist fellow employees in the essential initial flushing of the eye in case of chemical splash.

j. Welding operations not being totally enclosed, and the use by welders of screens with a finish of high reflectivity, thereby increasing exposure to ultraviolet radiation.

k. Lack of maintenance on grinder shields and work rests and neglect of goggles and face shields provided for communal use.

\* \* \* \* \*

## NATIONAL SAFETY COUNCIL AWARDS

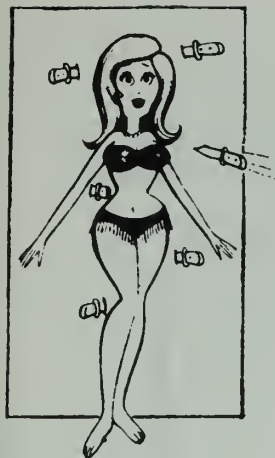
Watervliet Arsenal has been advised that they will receive the NSC Award of Merit for operating 1,527,025 man-hours without a disabling injury from 11 February to 16 June 1971.



The Field Safety Agency also received the NSC Award of Merit. Personnel of FSA have now achieved 20 years, or 1,600,00 man-hours, without a disabling injury, from 15 January 1951 to 15 January 1971.

### STARCH FOR NOMEX FLYING SUITS ???

There is an apparent misunderstanding about the lasting effects of starching Nomex flying suits. Specifically, some suits were inadvertently starched before the warning tag inside the suit was discovered. The warning tag states, "Do Not Starch. Starching will destroy the flame resistance." In some cases starched Nomex flying suits have been discarded in the erroneous belief that they were no longer fire resistant. PLEASE NOTE: Nomex is permanently fire resistant. Only the starch will burn. If starched, remove the starch by thorough laundering and the Nomex flying suit will be as fire retardant as when it was new.



TELL OF YOUR NEAR-MISS  
TO AVOID A  
DIRECT HIT!

George H. Griffin, Sr., Training Instructor  
Day & Zimmermann, Inc.  
Lone Star Army Ammunition Plant

The above title was adopted as the slogan for the Incident Recall Program of Day & Zimmermann, Inc., operator of Lone Star Army Ammunition Plant, Texarkana, Texas. The idea for the program was conceived from articles that appeared in the National Safety News magazine, October 1969, and the Modern Materials Handling magazine, January 1970.

The following is quoted from Modern Materials Handling, January 1970:

"The chief proponent of Incident Recall is Frank E. Bird, Jr., Safety Director for the Insurance Company of North America.

"To show the importance of seeking near-miss incidents, Mr. Bird conducted a study of 1 3/4 million accidents and incidents in 300 companies. It involved 4,000 hours of Incident Recall interviews.

"We found," he says, "that near-miss incidents far outnumber those accidents that are normally reported. For each serious or disabling injury that we identified, we found that there were 10 minor injuries, 30 property damage accidents, and 600 incidents in which something went wrong but there was no injury or visible damage.

"In other words, for every accident that causes serious injury in your plant, you are getting 600 warnings, through no-loss accidents, that could cause 600 injuries, if there is someone taking note of the incidents!

"That is the key to the Incident Recall idea....getting your employees to tell you about these warnings, and then taking corrective action."

These magazine articles were presented to the Lone Star Army Ammunition Plant's Safety Board with the recommendation that Incident Recall be initiated. The Safety Board, consisting of top management, considered this recommendation and directed that a "pilot" program be started 1 October 1970, with interviews to be conducted by selected management personnel. These interviewers selected individuals at random by job classification. After selection, the interviewer would study the job description, personal data, work location, etc., of the individual to become familiar with all aspects of the employee and his job, so a mutual

feeling of ease could be attained during the interview. The photo below shows the form utilized to notify those employees selected for interview.

<div style="text-align: center;"><b>D&amp;Z</b></div> <div style="font-size: small; text-align: center;">DAY AND ZIMMERMANN, INC. LONG STAR DIVISION OFFICE OF LONG STAR ARMY AMBULANCE PLANT TOLSON, TEXAS</div>		
NOTICE <small>BY FIRST CLASS MAIL REGISTERED MAIL</small>	NOTICE <small>BY FIRST CLASS MAIL REGISTERED MAIL</small>	NOTICE <small>BY FIRST CLASS MAIL REGISTERED MAIL</small>
To: _____		
<p>You have been selected to participate in our Incident Recall Program. We would like you to remember from your past experiences any "Near Miss" accident or "Unusual" occurrences that could have resulted in an accident.</p> <p>You will be contacted by _____ at _____ interviewer time</p> <p>_____ date place</p> <p>To discuss these experiences with the goal to Eliminate Accidents.</p>		

The Incident Recall Program received maximum plant-wide publicity which included pictures of the interviewers and a descriptive article in both the monthly newspaper and the tri-weekly bulletin. A poster depicting the slogan, "Tell of Your Near-Miss to Avoid a Direct Hit," was displayed at each time-clock station and periodically, a want ad appeared in the plant bulletin stating:

"WANTED: Your experiences with 'near-miss' accidents. These incidents will enable us to strengthen our safety program through Incident Recall. If you feel you can help, notify your supervisor who will contact one of our Incident Recall Interviewers to call on you."

At the end of the three-month trial period, a recap was made to determine what had been accomplished and whether the program should be continued. During the "pilot" program, 83 incident recall reports were made. From these reports there were:

- 29 New, different or re-instructions issued  
25 Engineer changes or study  
12 Replacement of worn parts or equipment  
3 SOP changes  
1 Industrial hygiene study  
1 Preventive maintenance

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- 2 Relocation of material and/or equipment
- 1 Stores conducting study
- 2 Mechanical changes
- 2 No changes, and
- 5 Not figured in above categories.

Management feels that the Incident Recall Program has enhanced the accident prevention program, and has directed that Incident Recall become a permanent program at Day & Zimmermann, Inc., Lone Star Division. The "pilot" program has been expanded to all areas of operation.

Fifty supervisors have recently completed a course in "Interviewing Techniques," and the Incident Recall Program is continuing. Indications are that results continue to be favorable, and as hazards are found, corrective action is taken to prevent the accident before it happens.

END

\* \* \* \* \*

### SAFETY AWARDS PRESENTED AT TOOELE ARMY DEPOT

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COL Anthony F. Daskevich, Commanding Officer, Tooele Army Depot, is shown receiving a National Safety Council Award of Honor from Mr. G. Ernest Bourne, Manager, Utah Safety Council. The award is in recognition of Tooele Army Depot's accumulation of 7,590,850 injury-free man-hours.

During the ceremony, an AMC Award of Merit for Safety for FY 1970, and several safe driving awards were presented.



# EXPLOSIVES SAFETY

## APE 1001M1, VERTICAL PULL APART MACHINE

To describe an ideal piece of equipment, one might communicate with adjectives such as safe, economical, productive, maintainable, dependable, efficient, etc. These are some of the attributes which would hopefully be inherent in the equipment. To add "gravy" to this listing of qualities, one might mention that the machine is multifunctional, capable of performing a variety of related or even unrelated tasks.

The APE 1001M1, Vertical Pull Apart Machine is indeed worthy of bestowal of the aforementioned descriptions. This equipment, with all available accessories, is capable of performing the following operations on fixed artillery ammunition, 37mm through 106mm, and rocket motors: (1) pull apart of cartridge case from projectile; (2) calibrate pounds of pull required to separate projectile from cartridge case; (3) resize cartridge case mouth; (4) reassemble and crimp cartridge case to projectile; (5) prime and deprime cartridge cases with press-type primers; and (6) continuity testing of 2.75" and 3.5" rocket motors.

It is interesting to note the progress which has been made over the years in the equipment used to perform such operations. For instance, renovation operations during the 1940's began with disassembly as shown in Figure 1 (right). A round was placed in the machine and the vise was tightened. Counterclockwise rotation of the handwheel removed the case from the projectile. In removing the cartridge case from the machine, the operator had to exercise caution against striking the primer, spilling the propellant and denting the case.

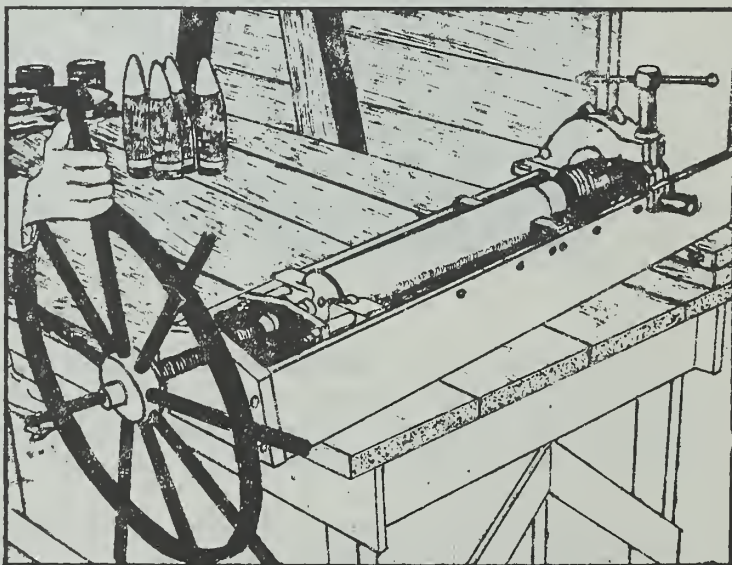


Figure 1

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Figure 2

After inspection of empty cartridge cases, acceptable cases were resized in the manner depicted in Figure 2 (left). The resized cases (including repaired cases with new primers) were then reloaded. The loaded cases were then taken to a re-assembly machine where they were re-assembled to the repainted projectiles. After reassembly, the cases were crimped to the projectiles as shown in Figure 3 (below). Following crimping, rounds were chamber gaged and acceptable rounds were repacked.

Personnel exposure to explosives hazards was of the highest magnitude in the renovation operations of yesteryear. The APE 1001M1 has alleviated this problem as well as others.



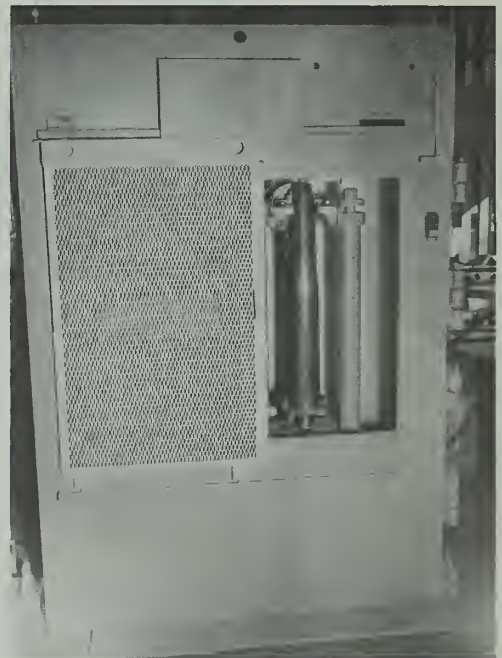
Figure 3

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The design and operation of the original APE 1001 Vertical Pull Apart Machine left much to be desired in the areas of hand protection and cartridge case damage prevention. One deficiency of note was that the operator could close the vise jaws prior to the round being raised to the proper position. In doing so, the cartridge case received crushing damage. Another major fault of the earlier equipment was the ease of which an operator could place his hands into the point of operation.

These hazards were removed by the installation of an outer safety door. With the closing of this safety door, the barricade door automatically closes, the round is raised into pull apart position, the vise jaws close, pull apart is accomplished, and the barricade door reopens. The operator then opens the outer safety door and removes the cartridge case. He then grasps the projectile and actuates bleed valves which open the vise jaws allowing removal of the projectile.

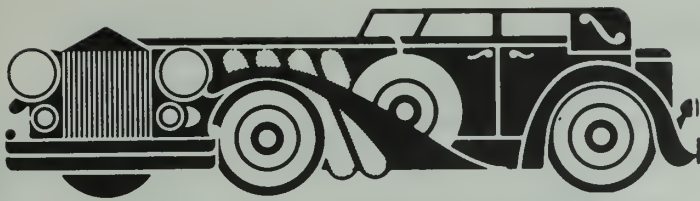
The APE 1001M1 Vertical Pull Apart Machine with outer safety door in the open position is shown in the photo (right). The barricade surrounding the equipment is of  $\frac{1}{2}$ -inch steel plate construction. The operational shield provides adequate protection to operating personnel and adjacent operations from gases generated by accidental ignition of propellant powder contained in fixed ammunition from 37mm through 106mm.



This brief discussion concerning the APE 1001M1 and its predecessor touched lightly upon the pull apart operation only. The equipment has proven itself in the performance of other operations mentioned earlier. The APE 1001M1 Vertical Pull Apart Machine is another example of the many improvements being developed for ammunition operations by the AMC Ammunition Center, the Savanna Army Depot, and Tooele Army Depot. The equipment can be obtained from the National Maintenance Point, MUCOM/APSA.

END

\* \* \* \*



UNAUTHORIZED SALE AND USE OF

"FARM USE ONLY"

TIRES \_\_\_\_\_

The following message was sent to all Governors of the United States:

"On October 9, 1969, you received an advisory concerning the problem of 'Farm Use Only' tires being sold to the consumer for use on motor vehicles operating on the public roads. At that time we sought your assistance in keeping such equipment from being used on the public roads of your State.

"On December 1, 1970, an Amendment to Federal Motor Vehicle Safety Standard No. 109 went into effect which should make it easier for the National Highway Traffic Safety Administration to seek civil penalties. This Amendment requires:

- "1. That tires not certified by the manufacturer as complying with the passenger car tire standard be branded with the phrase 'Unsafe for Highway Use.'
- "2. That each tire have two labels attached indicating that the sale of the tire for passenger car use subjects the person selling it to a civil penalty of up to \$1,000 for each tire sold.
- "3. That all tire manufacturers report to the Administration periodically the number of these tires sold and the names of the distributors or dealers who purchased them.

"The Amendment also subjects a person removing the labels before sale to the user, or any one who removes or alters the legend 'Unsafe for Highway Use' to civil penalties of up to \$1,000.

"In spite of the notices, press releases, and the issuance of the above Amendment on the subject, the Administration has found that unscrupulous distributors and dealers are continuing to remove and buff off restrictive labeling on these tires, and are selling them to unsuspecting members of the public. Moreover, even in cases where the dealer does not buff off the restrictive labeling and does not remove the two attached labels, the Administration is aware of cases where members of the public have bought tires and then, in turn, have the tires mounted by some one other than the seller.

"Your assistance in remedying this hazardous practice which can endanger the lives and property of the general public is again solicited. The need for publicizing this dangerous practice through the news media is

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apparent. It is further recommended that your office consider incorporating the restriction of 'Unsafe for Highway Use' tires into the Motor Vehicle Inspection Process, or using whatever administrative procedures your office has available to eliminate this hazardous practice as it presently exists throughout this country."

END

\* \* \* \* \*

## COMPLIANCE WITH ENVIRONMENTAL CONTROL CLEAN AIR ACT IN PRODUCTION CONTRACTS

MG C. T. Horner, Jr., in his 14 July 1971 letter, stated that in order to comply with the Clean Air Act (42 US Code 1857 et seq), and Code of Federal Regulations, Paragraph 1201, title 45:

"It is the policy of this command, effective at once, that all future AMC contracts and additions to existing AMC contracts for procurement of wheeled tactical and administrative vehicles as well as new replacement engines for all existing vehicles of these types shall contain provision for compliance with the Clean Air Act (42 US Code 1857 et seq). The contracts shall provide that AMC-procured wheeled tactical and administrative vehicles/engines be certified by the Environmental Protection Agency (EPA) as having met, as a minimum, the emission standards applicable to the year of delivery, or an exemption/exclusion must be obtained from the Administrator, EPA, prior to contractual action.

"The EPA provided an opinion on 14 June 1971 that tracked vehicles do not fall within the definition of vehicles as defined in the Clean Air Act. Therefore, tracked vehicles such as tanks, crawler cranes, and bulldozers are not subject to the emission regulations of this Act. Neither are replacement engines for these tracked vehicles subject to the Act.

"Vehicles/engines being procured for another country will meet that country's regulations, or, in the absence thereof, the applicable US regulations (if not exempt), unless the receiving country advises EPA that no air pollution requirements for vehicles/engines exist for their country.

"Laws are being promulgated which will, within one to five years, bring under control the emissions of other engine driven equipment such as aircraft, watercraft, locomotives and stationary internal combustion engines. Also, laws controlling noise levels from vehicles and other items and discharges of sewage and other pollutants from watercraft are being enacted. The AMC policy is to comply with the new federal environmental control laws as they become applicable by meeting the applicable standards. Exemptions will not be sought unless approved by this headquarters.

"This headquarters recognizes that implementation of these environmental control laws will have an impact on the scheduling and funding of PEMA programs for future procurement/reprocurement of wheeled tactical vehicles/engines."

# WISE OWL



MEMBERSHIP GROWS !

Recent incidents at Frankford Arsenal have gained membership for Messrs. James Avery and Anthony Saia to the Wise Owl Club of America. Workers who escape serious eye injuries through the wearing of safety glasses are qualified to join this exclusive organization.



Avery, an instrument maker, was removing steel taper pins from a large telescope mount by tapping a drift pin with a large hammer. The heavy blows dislodged a mushroomed particle from the drift pin where it contacted the taper pin and struck the lens of Avery's safety glasses.

Saia, a metallurgist, was working with a molten pyrophoric mixture of metals. When the mixture was being poured into a mold, a sudden eruption occurred, spraying the material about the room. Saia suffered superficial burns of the face and right hand. His safety glasses were spotted by the mixture.



The wearing of safety glasses prevented serious injury and possible blindness to both men. It should be noted that these men were the 47th and 48th recipients of the Wise Owl Club award at Frankford Arsenal since 1950.

ROCKY MOUNTAIN ARSENAL WINS THIRD PLACE  
IN 1970 FIRE PREVENTION CONTEST

Rocky Mountain Arsenal has earned the third place award, Military Division (U. S. Army), in the 1970 Fire Prevention Contest sponsored by the Fire Prevention and Clean-Up Campaign Committee of the National Fire Protection Association (NFPA).

The award plaque was presented by COL Howard W. Shear, Commanding Officer, Rocky Mountain Arsenal, to Chief Myron P. Gerton, a 28-year veteran of the Arsenal's Fire Department.

The installation has maintained an enviable record of no reportable fire losses during the past 15 years. Since entering subject contest in 1956, the Arsenal has placed among the top 20 winners each year and has ranked within the top five over the past five years. This has included one Grand Award (1969).



PUEBLO ARMY DEPOT INITIATES  
"ON-THE-SPOT" SAFETY RECOGNITION

During his travels about Pueblo Army Depot, COL John T. Andrews, Jr., Commanding Officer, presents "instant" safety awards to those employees he observes doing a "little extra" to prevent accidents. The first recipient was Mike Vialpando of the Support Services Division, shown (center) receiving an indoor thermometer and key chain from COL Andrews. The employee's supervisor, Eugene Ellis (left), looks on at the "spur-of-the-moment" ceremony.



Mr. Vialpando was observed replacing barricades and safety cones at an excavation after the wind had toppled them during the previous night. Several employees drove past the location prior to Mike, but did nothing about the unsafe condition.



Here are ten questions that will test your knowledge of safety requirements that you will need under different circumstances. Answers to these questions may be found in the AMCR 385-series and the AMC Supplements to the AR 385-series. How many can you answer without referring to the regulations?

1. When is the wearing of respiratory protective devices mandatory?

Answer and reference:

2. What fire-fighting equipment should be maintained in railway yards?

Answer and reference:

3. What protective clothing shall be provided for employees (acid workers) who handle acids on a regular basis?

Answer and reference:

4. What does the term "initiating explosives" generally include?

Answer and reference:

5. May storage magazines be provided with heat?

Answer and reference:

6. What type fuels may be used for heating and power boilers at AMC installations?

Answer and reference:

7. How often shall lightning protection systems be inspected and tested?

Answer and reference:

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8. What prerequisites should an AMC installation aviation safety officer possess?

Answer and reference:

9. May Government-owned, Government-operated establishments submit applications for National Safety Council (NSC) no-injury record awards directly to the NSC?

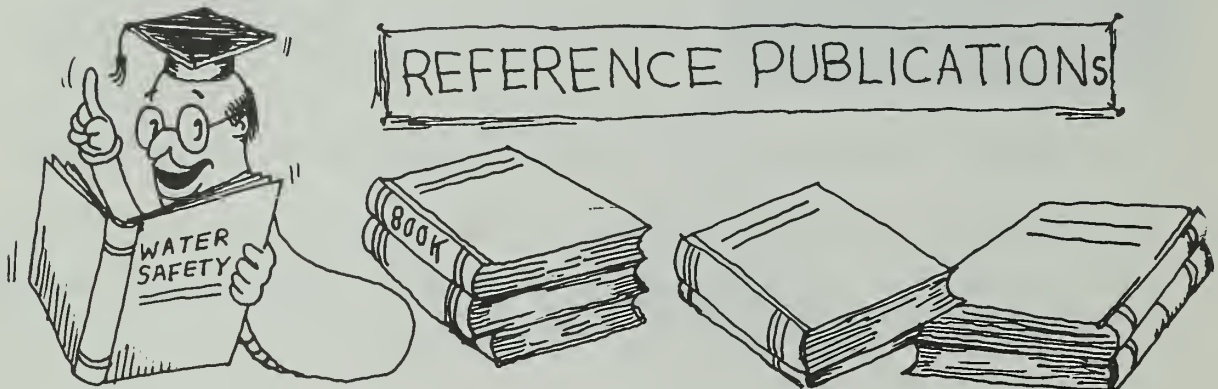
Answer and reference:

10. Under what circumstances should an investigation board be appointed following an explosives accident?

Answer and reference:

END

\* \* \* \* \*



AR 55-56, Ch 2  
16 Jun 71

Transportation and Travel - Transportation of Dangerous or Hazardous Chemical Materials

AR 385-15  
18 Jun 71

Safety - Water Safety

AR 385-41  
1 Jun 71

Safety - U. S. Army Accident Codebook

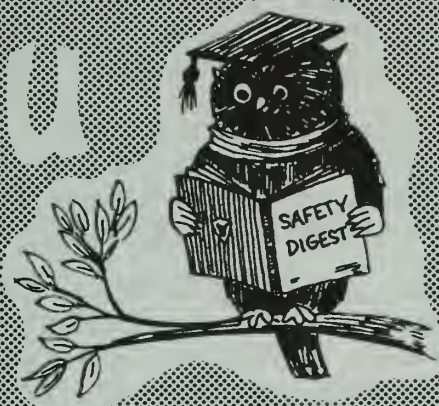
DA Cir 385-28  
23 Jun 71

Safety - Prevention of Accidents Involving Privately Owned Motor Vehicles

DA Cir 385-27  
22 Mar 71

Safety - Training for Army Safety Personnel

# WELL DID YOU KNOW?



Here are the answers to the questions on pages 35 and 36. A reference to the pertinent regulation and paragraph follows each answer.

1. Persons employed in dusty or toxic atmospheres, where adequate ventilation or engineering controls have not been provided, shall be provided with and required to wear respiratory protective devices of the type approved for the hazard by the United States Bureau of Mines. Reference paragraph 10-9, AMCR 385-100.
2. Fire-tool boxes painted red and plainly marked, "For Fire Only," should be installed at intervals of not more than 500 feet adjacent to yard tracks. These boxes should contain as a minimum, one fire ax, one shovel, one pinch bar, three fire pails and one 5-gallon, pump-type water fire extinguisher (nonfreeze where necessary). A properly maintained water barrel should be placed alongside the tool box. Reference paragraph 12-24b, AMCR 385-100.
3. All employees (acid workers) who handle acids on a regular basis shall be provided with rubber gloves, boots, goggles, aprons and hats. Reference paragraph 13-4d, AMCR 385-100.
4. Initiating explosives include lead azide, mercury fulminate, lead styphnate and tetracene. Reference paragraph 14-2, AMCR 385-100.
5. Storage magazines, in general, should not be provided with heat. Exception is made in the case of magazines where heating may be necessary to prevent condensation of moisture, to maintain constant temperature, or other reasons. If steam or hot water coils are used to heat the magazine, they must be so arranged that explosives material cannot come in contact with the coils. Reference paragraph 18-5b, AMCR 385-100.
6. Fuel oil, coal, natural or manufactured gases, and liquefied petroleum gases may be used in both explosives and inert areas at AMC installations. Fuel oil is preferred. Reference paragraph 5-26a, AMCR 385-100.

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7. Lightning protection systems shall be visually inspected semiannually and shall be tested once each year for electrical continuity and adequacy of grounding. Reference paragraph 8-21a, AMCR 385-100.
8. An aviation safety officer should be a senior military or DA civilian aviator, qualified in unit rotary and fixed wing aircraft, instrument rated, and a graduate of the Army Aviation Safety Course. Reference paragraph 7a(1), AMCR 385-26.
9. No. Applications by AMC Government-owned, Government-operated installations and activities for National Safety Council no-injury record awards must be forwarded through command channels, to the Director, AMC Field Safety Agency (to verify records, and assure that the installation has applied for the award under the proper industrial grouping as shown in NSC Accident Facts). Reference paragraph 4f(4), AMCR 385-5.
10. An investigation board will be appointed after the occurrence of an explosives accident that causes more than \$10,000 property damage, or in which one or more of the following occurs:
  - a. One or more lives are lost.
  - b. One or more persons are critically injured.
  - c. Ten or more persons suffer minor injuries.
  - d. Interruption of more than 24 hours to production is probable.

Reference paragraph g, page 3, Change 2, USAMC Suppl 1 to AR 385-40.



# Line

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Line -- a cord, wire, or string. What does it mean to you? What can you use it for? How has it worked to help you?

A long, fine, strong cord, with a hook attached, is used for fishing. Hazard? Yes, sometimes to the fish, but it must be handled with care to prevent the hook's point from piercing you -- a hazard hanging on a line, but safe because it is attached there only if it is controlled.

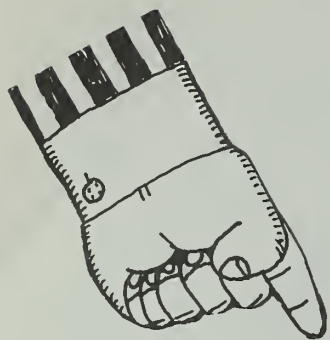
Elms once lined the streets, giving beauty and shade by day, marking the path of safety by night. Today a white or yellow line marks the safety of our highways, giving us a guide for turns, safety in passing, and a helping hand during foggy days or nights. Drivers of vehicles seldom stop to think of how much work goes into research or the cost of material for markings, and engineering for placement of safety lines for your protection on the highways.

Line of Fire -- the course of a bullet that has been, or is to be, fired. One of the great sports in Pennsylvania is about to take place on the opening day of the small game season and continuing into mid-December. This sport involves the use of scatter guns and high-powered rifles. Men and women will take to the fields and forests to enjoy the sport of the great outdoors. Make sure the line of fire is to your desire and make it safe.

Make safety your first and upmost line through this season so that you and yours can enjoy the future Holidays.

\* \* \* \* \*





# SAFETY SAM! ★

(THE MOST SAFE MAN  
IN THE WORLD!)











Today is  
yesterday's  
reward for  
safety.